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"SILK ROAD CAMEL: THE CAMELIDS, MAIN STAKES FOR SUSTAINABLE DEVELOPMENT"

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One hundred and sixty one Maghrebi camel hides were collected from Mareth slaughterhouse (Southern Tunisia) and transported to factory among the 4rst hours after slaughtering. Camels had 1 to 2 years old and weighting approximately 200 kg. Immediately after reception, unnecessary parts (tail, callosities) were removed and hides were weighted and conserved until tanning.
Conservation: Tow types of conservation were used; salting with NaCl (40%) and freeze at -18°C (Photos 1, 2 and 3).
Tanning: Two methods of tanning were tested; vegetable (*Aspidosperma quebracho*) method and or chromic oxide. The operation was realized in the National Leather and the Shoes Center (CNCC)

Photo 1: Salting process of camel hides

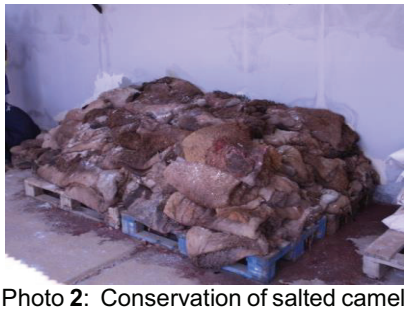

Photo **2**: Conservation of salted camel hides

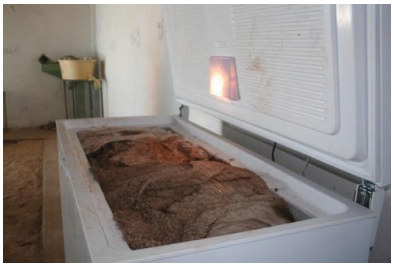

Photo 3: Conservation of camel hides in freezer

Data concerning the leather yield were statistically analyzed using GLM procedure (SAS, 2002). The model mainly included the effects of conservation, the tanning procedure and their interaction. The results are presented mean ± standard error.
Results and discussion
Taking into account the the initial shape, the camel hide must be cut to 3 portions including neck, right and left shares. This makes more easily the preparatory stage which includes preservation, soaking, liming, unhairing, fleshing, splitting, reliming, deliming, bating, degreasing, bleaching, pickling and depickling (IL&FS, 2010). In the first 20 days after slaughter and salting, the hides lost some 20% of their weight. This is a sign that hides are properly curing. In freezing system, hides did not lose in their weight. However, salt used for preserving the hide generates huge amounts of pollution in terms of total dissolved solids and chlorides in the resulting effluent of the soaking operation during leather making. Freezing method was more expensive but eco-friendly. No difference in the leather yield was found between freezing and salting procedures of conservation (1.08 ± 0.04 vs. 1.10 ± 0.05 pc/kg). These values are relatively less than usually obtained using cow hides.
Two tanning methods were compared in this study; vegetable tanning and chrome tanning. The chemical tanning produced more leather than vegetable procedure (1.13 ± 0.02 vs. 1.05 ± 0.02 pc/kg). It well documented that, tanning converts the raw hide into a stable material that dries out to a flexible form without putrefying and becomes suitable for a wide variety of end applications (Krishnamoorthy et al., 2012). The process of vegetable tanning requires more time (72 h) so that the dye penetrates to the hide. Further, the hides are dipped in sodium bicarbonate or sulphuric acid drums for bleaching and for the removal of tannins bound to the surface.
Chrome tanning is relatively short and need only 24 h. It is done by the reaction between the hide and trivalent chromium salt, most commonly basic chromium sulphate.
These results showed than more work is necessary to improve the yield of the camel hide considering animal health, hide clearance and tanning procedure.

References

1. IL & Fs Environment, 2010. Technical EIA Guidance Manual for Leather/skin/hide Processing Industry. Ministry of Environment and Forest. Government of India.
2. Krishnamoorthy, G., Sadulla, S., Sehgal, P.K., Mandal, A.B., 2012. Green chemistry approaches to leather tanning process for making chrome-free leather by un-natural amino acids. J. Hazard. Mater. 173-182.

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EFFECT OF MUSCLE TYPE ON AMINO ACID COMPOSITION OF BACTRIAN (*CAMELUS BACTRIANUS*) CAMEL

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Abstract

This study was aimed to determine amino acid composition of Infraspinatus, Triceps brachii, Longissimus thoraces, Biceps femoris, Semitendinosus, and Semimembranosus muscles from nine Bactrian carcasses (2-3 years of age). The value of essential amino acids value significantly varied between selected muscles. The ranges of most abundant essential amino acids in Bactrian camel meat were leucine (8.14 and 22.99 g/100 g protein), threnonine (6.56 and7.58g/100g protein),

methionine (6.56 and7.58 g/100g protein), isoleucine (4.17 and7.21 g/100g protein) and lysine (5.02 and7.43 g/100g protein).
The lowest mean values were in serine (1.71 mg/100g protein), tyrosine (2.28 mg/100g protein) and alanine (2.72 mg/100g protein). In the essential amino acid fraction, the major amino acid was lysine, which was significantly (P<0.05) higher (g/100 g protein) in Infraspinatus (7.43), Semimembranosus (7.25) and Longissimus thoracis (7.08) muscles than Triceps brachii (5.80), Semitendinosus (5.10) and Biceps femoris (5.02) muscles. The second main essential amino acid was leucine, which also showed significant differences (P<0.05) among muscles. The Biceps femoris muscle (22.99 g/100 g protein) and Semitendinosus muscle (22.33 g/100 g protein) contained the highest amount compared to the other muscles (values ranged from 8.14 to 14.71 g/100 g protein). The Longissimus thoracis muscle had significantly (P<0.05) lower aspartic content (8.33 mg/100g protein), higher glutamic acid (9.18 mg/100g protein), higher arginine (12.21 mg/100g protein) and higher proline (10.12 mg/100g protein) than most of the other muscles.

Key words: Bactrian camel, Amino Acid, muscle.

БАКТРИАН ТҮЙЕЛЕРІ (CAMELUS BACTRIANUS) БҰЛШЫҚ ЕТТЕРІНІҢ АМИНҚЫШҚЫЛДЫҚ ҚҰРАМЫ

Бұл жұмыста 9 бактриан түйелерінің (2-3 жас) Infraspinatus, Triceps brachii, Longissimus thoraces, Biceps femoris, Semitendinosus, және Semimembranosus бұлшық еттерінің құрамындағы аминқышқылдарының мөлшері анқыталды. Ауыстырылмайтын аминқышқылдарының мөлшері бұлшық еттердің түріне байланысты өзгерді. Бактриан түйесі етінің құрамындағы ең бай ауыстырлмайтын аминқышқылдары лейцин (8.14-22.99 мг/100г), треонин (6.56-7.58 мг/100г), метионин (6.56-7.58 мг/100г), изолейцин (4.17-7.21 мг/100г) және лизин (5.02-7.43 мг/100г).
Мөлшері төмен аминқышқылдар серин (1.71 мг/100г), тирозин (2.28 мг/100г) және аланин (2.72 мг/100г). Ауыстырлмайтын аминқышқылдарының ішіндегі негізгі аминқышқылы лизин болып ол (P<0.05) (г/100г белок) Infraspinatus (7.43), Semimembranosus (7.25) және Longissimus thoracis (7.08) бұлшық еттерінде Triceps brachii (5.80), Semitendinosus (5.10) және Biceps femoris (5.02) бұлшық еттеріне қарағанда жоғары болды. Келесі негізгі аминқышқылы лейцин болып, оның мөлшері де ұқсамаған бұлшық еттерге байланысты әртүрлі болды, яғни, Biceps femoris (22.99) және Semitendinosus бұлшық еттері (22.33) басқа бұлшық еттермен салыстырғанда жоғары болды.

Түйін сөздер: Бактриан түйесі, Аминқышқылы, Бұлшық ет.

АМИНОКИСЛОТНЫЙ СОСТАВ МЫШЦ ДВУГОРБЫХ ВЕРБЛЮДОВ (CAMELUS BACTRIANUS)

Это исследование было посвящено определению аминокислотного состава следующих мышц: подостная, Triceps brachii, Longissimus thoraces, Biceps femoris, Semitendinosus и Semimembranosus девяти бактрианов (2-3 лет). Количественный состав незаменимых аминокислот различался в зависимости от типа мышц. В мышцах двугорбых верблюдов в наибольшем количестве встречались следующие виды незаменимых аминокислот: лейцин (8.14-22.99 мг /100 г), треонин (6.56-7.58 мг/ 100 г), метионин (6.56-7.58 мг/100 г), изолейцин (4.17-7.21 мг/100г) и лизин (5.02-7.43 мг /100 г). В наимешьшем количестве были предсталены серин (1,71 мг / 100 г), тирозин (2,28 мг / 100 г) и аланин (2,72 мг / 100 г). Во фракции незаменимых аминокислот, лизин, которая была значительно (P <0,05) выше, (г / 100 г белка) в Infraspinatus (7.43), Semimembranosus (7.25) и Longissimus thoracis (7.08), чем мышцы Triceps brachii (5.80), Semitendinosus (5.10) и Biceps femoris (5.02) мышцы. Второй основной аминокислота лейцин был, который также показал значительные различия (P <0,05) между мышцами. Biceps femoris (22.99) и Semitendinosus бұлшық еттері (22.33) представил высокое содержание по сравнению с другими мышцами.

Introduction

Camel meat has a comparable essential amino acid contents to beef, lamb and goat meat (Kadim et al, 2012). The amino-acid composition of muscles is an important parameter to determine the quality of meat, mostly because of the high number of essential amino acids cannot be synthesized by humans (Raiymbek et al 2015). The current study aimed to compare the essential and non-essential amino-acid composition of Bactrian camel meat muscles.

Materials and methods

Amino acid compositions of meat samples were determined using method described by Maria et al. (1991). Eight grams of fresh meat samples were homogenized in hydrochloric acid (0.1M) in a ratio of 1:5 then centrifuged at 10000g for 20 min at 4^{o}C. The supernatant was filtered through glass microfiber filters and collected for chemical deproteinization. Two ml of supernatant was mixed with 4 ml of acetonitrile and the mixtures stood for 30 min at room temperature, then centrifuged at 10000g for 15 min at 4ºC. The supernatant (750µl) was mixed with 100 µl internal standard (amino butyric acid), then 75 µl was dried under a stream of nitrogen and kept for derivitization. Twenty µl of methanol–sodium acetate (0.5%) - TEA (2:2:1) was added to each samples, mixed and dried. Then, 20 µl of methanol-HPLC water-TEA-PITC (7:1:1:1) were added, mixed and dried again. 500µl of sodium phosphate containing 5% acetonitrile (5mM) was added and kept for injection. Amino acids profile were analysed using Dionex UltiMate 3000 HPLC System equipped with a Dual Gradient Pump DGP-3600SD, an Inline-3000TSL Split Loop Auto-sampler, Thermostatted Column Compartment TCC-3000RS, Solvent Rack with Degasser SRD-3600, Thermostatted Column Compartment TCC-3000SD and controlled with Chromeleon 7, version 7.1. A Dionex Acclaim, 120 - C18, (3µm particle size**)** column (3x150mm)

Results and discussion

Table 1. Amino acid composition of Bactrian camel Infraspinatus (IS), Triceps brachii (TB), Longissimus thoracis (LT), Semitendinosus (ST), Semimembranosus (SM), and Biceps femoris (BF).

	Muscles

	IS	SM	TB	ST	BF	LT	SEM[1]
Essential amino acids (EAA)							
Leucine	13.74^{b}	14.71^{b}	13.07^{b}	22.33^{c}	22.99^{c}	8.14^{a}	0.722
Phenylanine	6.33^{b}	12.35^{c}	5.51^{b}	4.38^{b}	4.74^{b}	2.79^{a}	1.278
Lysine	7.43^{c}	7.25^{c}	5.80^{bc}	5.10^{a}	5.02^{a}	7.08^{c}	1.278
Histidine	4.23^{b}	5.13^{c}	4.54^{bc}	3.52^{b}	1.47^{a}	3.77^{b}	0.532
methionine	6.62	7.28	6.56	7.58	6.74	7.03	0.101
isoleucine	6.79^{b}	7.21^{c}	6.67^{b}	6.97^{bc}	6.13^{b}	4.17^{a}	0.337
Threonine	5.85^{a}	7.30^{bc}	6.48^{a}	9.90^{c}	7.98^{c}	9.30^{c}	0.664
Tryptophan	0.35	0.31	0.33	0.62	0.56	0.14	0.073
Valine	5.18^{a}	6.93^{b}	6.18^{b}	7.51^{b}	4.83^{a}	14.46^{c}	0.632
Non-essential amino acids (NEAA)							
Aspartic	7.87^{a}	18.18^{c}	17.86^{c}	12.41^{b}	11.37^{b}	8.33^{a}	1.024
Glutamic	5.19^{a}	5.90^{a}	5.45^{a}	8.59^{c}	7.56^{b}	9.18^{c}	0.293
Serine	1.62^{a}	1.87^{a}	1.28^{a}	2.14^{b}	1.41^{a}	1.94^{b}	0.217
tyrosine	0.04a	0.00	0.00	5.67^{c}	4.15^{b}	3.52^{b}	0.207
Arginine	3.37^{a}	7.55^{ab}	7.60^{ab}	9.72^{b}	5.65^{a}	12.21^{c}	0.647
Alanine	4.22^{c}	2.95^{b}	1.96^{a}	2.37^{ab}	1.97^{a}	2.86^{b}	0.237
Proline	9.18^{a}	12.97^{b}	11.65^{b}	17.26^{c}	10.12^{b}	19.67^{c}	1.000
EAA:NEAA	0.64^{a}	1.39^{b}	1.20^{b}	1.17^{b}	1.03^{b}	0.99^{ab}	0.201

[1]SEM: standard error for the mean. Means in the same row with different superscripts are significantly different (P<0.05).

The most abundant essential amino acid in Bactrian meat was leucine (8.14-22.99 g/100 g), threnonine (6.56-7.58g/100g), methionine (6.56-7.58 g/100g), isoleucine (4.17-7.21 g/100g) and lysine (5.02-7.43 g/100g). In the essential fraction, the major amino acid was lysine, which was significantly (P<0.05) higher (g/100 g protein) in *Infraspinatus* (7.43), *Semimembranosus* (7.25) and *Longissimus thoracis* (7.08) muscles than *Triceps brachii* (5.80), ST (5.10) and *Biceps femoris* (5.02) muscles.

Muscle type had significant (P<0.05) effect on non-essential amino acid composition (Table 4.5). Similar to the essential amino acids, non-essential amino acids contents also significant varied between muscles. Proline (13.5 mg/100g), aspartic acid (12.7%), arginine (7.68 mg/100g) and glutamic acid (6.98 mg/100g) were the most abundant amino acids in the non-essential fraction. The lowest mean values were in serine (1.71 mg/100g), tyrosine (2.28 mg/100g) and alanine (2.72 mg/100g). The *Longissimus thoracis* muscle had significantly (P<0.05) lower aspartic content (8.33 mg/100g), higher glutamic acid (9.18 mg/100g), higher arginine (12.21 mg/100g) and higher proline (10.12 mg/100g) than most of the other muscles.

Reference

1. Maria-Cocncepcion, A., Toldra, F., (1991). Deproteinization techniques for HPLC amino acid analysis in fresh pork muscle and dry-cured ham. *Journal of Agriculture and Food Chemistry* 39, 1792–1795.
2. Kadim, I.T., Al-Ani, M.R., Al-Maqbaly, R.S., Mansour, M.H., Mahgoub, O. and Johnson, E.H. (2011) Proximate, amino acid, fatty acid and mineral composition of raw and cooked camel (*Camelus dromedarius*) meat. *British Food Journal* 113, 482-493.
3. G. Raiymbek, I. Kadim, G. Konuspayeva, O. Mahgoub, A. Serikbayeva, B. Faye. (2015) Discriminant amino-acid components of Bactrian (Camelus bactrianus)and Dromedary (Camelus dromedarius) meat. *Journal of Food Composition and Analysis* 41, 194-200.

OPPORTUNITIES AND CHALLENGES OF MODERN CAMEL DAIRYING

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The centuries' long evolution and adaptation (selection for traits of choice by pastoralists) process made camel a unique and highly resilient animal to the calamities of its ecosystems. The camel was mainly used in that period (pre-historic to automobile) as a beast of burden (wars, pastoral transportation, desert accessibility etc.), while milk, meat and other products were used as by-products (additional asset). The onset of automobile industry replaced (the intensity increased with the modernization and abundance of automobile) the role of camel as beast of burden and new option hopes were explored to place this precious genetic resource at its proper place in the changing world, the milk.

This exploration resulted to turn camel towards its original task ~ The Milk. The revolt changed the breeding goals, mainly centering on more, long and easy milk. The potential high yielding camels are centering in the Arab peninsula again from different parts of Asia and Africa with some specimen producing 40 liters of milk daily. Huge camel dairy farming is coming in existence with highly sophisticated milking facilities and other farm mechanization. The milk processing and value addition revitalizing this precious camel milk and attracting thousands of people not only in its habitat but also from the other parts of the world. The demand for camel milk is ever increasing and highly appreciated for health promising attributes. There are challenges too, ranging from milk production to harvest, camel captivity in farm, controlled feeding and coexistence with farm machinery and activities. There is paramount need of time to compile the scattered information regarding modern camel dairying and transform into knowledge for the development of this unique profession to ensure food security in climate change scenario.

Key words; Camel origin, modern camel dairying, camel milk, knowledge management, climate change, food security